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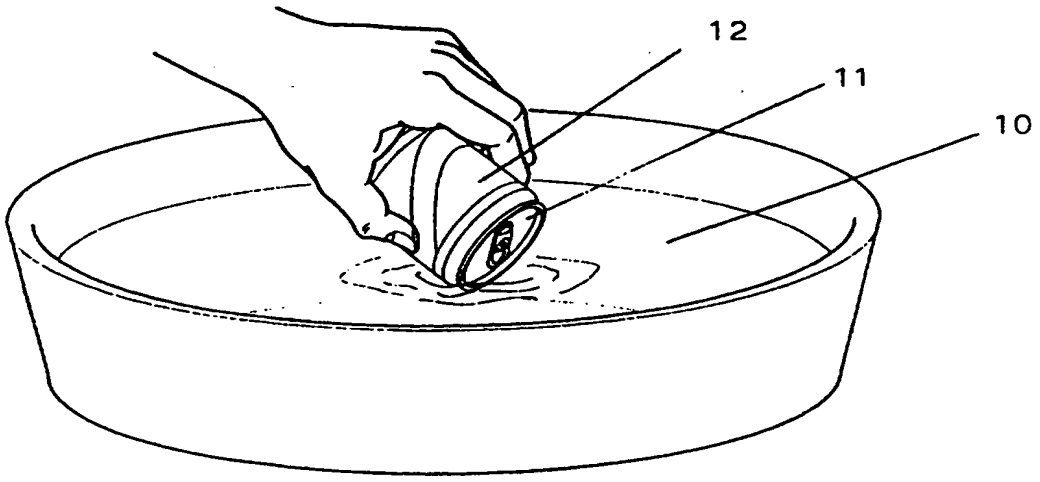
(54) Title: METHOD FOR HYGIENICALLY SEALING DRINK CONTAINERS AND CONTAINERS OBTAINED THEREBY

(57) Abstract

Method for hygienically protecting drink containers (12) provided with a tear-off sealing tongue which remains attached to the head portion (11) of the container when the latter is opened. The head portion is coated by simple dipping into a non-toxic, biodegradable liquid that is capable of setting in a few seconds, thereby forming an adhering film (10) that coats at least that portion of the head portion (11) of the container in which the drink delivery orifice (14) is provided. The solution according to the invention is particularly simple, economic and effective to implement, convenient in its use, and complying with applying environmental regulations.



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METHOD FOR HYGIENICALLY SEALING DRINK CONTAINERS AND CONTAINERS OBTAINED THEREBY

DESCRIPTION

The present invention refers to a method for hygienically sealing drink containers and, in particular, tin or can-type containers provided with a head portion in which a zone is specially pre-arranged to provide an opening from which the drink contained in the can or tin can then be poured.

It is a commonly known fact that drinks of various types, such as for instance beer, fruit juices and the like, are already being largely marketed in tins or cans, mostly made of aluminium. On the head portion of each such tin or can there is normally arranged a tear-off tongue and related ring to set free an opening for delivering the drink contained therein. Most consumers have developed a habit of tearing off said tongue to open the can and, then, directly drinking the liquid by approaching the can to their mouth.

Now, such a habit is clearly a rather questionable and dangerous one from a hygienical point of view, since cans tend to cover themselves with dust, polluting substances,

etc. during transportation and the periods spent on warehouse or store shelves.

The problem of protecting drink cans hygienically, particularly in correspondence of their drink delivering or pouring zone which is being brought into direct contact with the mouth of the consumer, has already been identified and coped with since a long time now.

So, for instance, the US patent specification 3,204,805 discloses a solution which, after the whole container, or even only the drink delivering portion thereof, has been duly sterilized, calls for the same container to be protected with a cladding of non-toxic plastic material that is adapted to be removed when the container is being opened.

When the tongue sealing the drink delivery opening of the container is torn off, the protective cladding is cut partially and can then be completely removed by hand (in this connection, see particularly Figs. 6-8).

The above cited patent specification fails however to describe the method used to actually apply such a protective cladding on to the can. From the drawings that accompany the patent, anyway, it can be inferred that such a protective cladding (11) is first moulded and subsequently applied to adhere to the can by a wrapping-up coupling of shapes. In fact, it would not be otherwise possible to explain the particular form of the same cladding, which is so shaped as to enclose the head portion of the container with an angular extension that is greater than 180°. It may be argued that, quite clearly, such a form is actually necessary in order to prevent the cladding from accidentally coming off, ie. detaching from the container when the latter is being handled. The therein disclosed solution, therefore, appears to be rather

complicated and expensive, since it requires two distinct operations to be performed, ie. the moulding of the protective cladding and the application thereof on to the container.

Anyway, such a solution, which dates back to more than 30 years ago, can hardly be implemented in practical use any longer, owing to newly introduced environment-safeguard regulations, endorsed by an increasing number of countries throughout the world, according to which the tear-off tongue of drink containers shall not break off the container in view of facilitating the differentiated disposal and recovery of the raw materials involved.

With currently used drink containers, in which the opening tear-off tongue remains in this way attached to the container and is arranged so as to recede into the same container in correspondence of the correspondingly formed drink delivery opening, the solution according to the afore cited patent application turns out to be practically useless, since the protective cladding would not be automatically cut when tearing off the opening tongue. It therefore ensues that such a cladding would have to be torn off by force by the consumer, so that the liquid in the container is quite likely to get spilled.

In view of eliminating the drawbacks connected with the above illustrated solution, different protective concepts have been devised subsequently. So, for instance, the US patent specification 3,362,572 describes a drink can provided with a tear-off opening tongue (C) which remains attached to the head portion of the can. Such a head portion is entirely cladded with a cap (E) of plastic material, the latter being in turn provided with a flexible extension (G) for its removal and a hook-like portion (F) causing the cap to engage the can opening tear-off tongue.

Anyway, even such a solution appears to be quite

complicated and expensive, since it requires a specially shaped cap to be moulded under utilization of a considerably greater amount of plastic material. Furthermore, the head portion of the can, when provided with such a cap, becomes fully flat and smooth, ie. without the typical circular raised edge which is on the contrary quite useful to ensure mutual engagement of stacked cans.

The US patent specification 4,749,100 describes a quite more recently devised solution according to which the entire head portion of the can is still cladded with a sheet of suitable material (moulded plastics, paper or the like), which shall anyway be flexible and bio-degradable. Such a sheet shall in addition be given such a shape as to enable it to also wrap around the protruding edge of the can and engage the same edge so as to avoid being accidentally detached therefrom. Even in this case the hygienical protection of the can turns out to be quite complicated and expensive, since it requires the use of special equipment and tools to shape and apply the cladding sheet.

It would therefore be desirable, and it is in fact a main purpose of the present invention, to provide a hygienical protection of drink containers according to a solution which is simple and inexpensive to implement, practical in its use and complying with the most recent environmental protection regulations.

The present invention provides exactly such a solution, which consists of a film for at least partially cladding the head portion of the drink container, said film being applied by simply dipping the portion to be cladded in a non-toxic liquid substance which adheres to it and solidifies in just a few seconds, and which can be removed by simply peeling it off when needed, ie. when the the drink has to be drunk.

Characteristics and advantages of the solution according to the present invention will be more clearly understood from the description that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a view showing the simple method required to apply the hygienical sealing to the head portion of a drink container according to the present invention;

- Figure 2 is a view of a drink container after the application of the related hygienical sealing according to the present invention;

- Figure 3 is a view showing the opening of the tear-off tongue of the can illustrated in Figure 2; and

- Figure 4 is a view illustrating the hygienical sealing being removed upon opening of the container shown in Figures 2 and 3.

As it can be noticed from the illustrations in the above listed Figures, the method according to the present invention is particularly advantageous for applying a hygienical seal 10 on to that zone of the head portion 11 of a drink can 12 which normally is brought into contact with the mouth of the consumer when the latter selects to drink directly from the can upon opening it.

The head portion 11 of the can 12 is usually provided with a tongue 13 which is capable of being torn off so as to unseal an orifice 14 through which the drink can then be delivered. As known, and as shown particularly in Figure 3, said tongue 13 is bent upwards, thereby causing the pre-engraved zone of the head portion 11 sealing the orifice 14 to be cut open.

According to the present invention, the can 12, after having been filled, closed and sterilized, is simply dipped, in an inclined position, into a bath of a non-toxic substance 10 (Figure 1), which is heated to keep it in its liquid state and which hardens and solidifies after just a few seconds after the removal of the can from the bath.

Such a dipping of the can into the sealing bath can be limited to a zone of the head portion 11 and the related edge, so as to seal just the orifice 14 with said sealing substance 10. A coating forms therefore on the head portion 12 which extends to cover an opening (irregular) angular sector which is narrower than 180°. As a result, the usage amount of substance 10 is minimized.

The application of the coating 10 can of course be automated along the same line in which the cans are filled. To this purpose the cans, after their filling, sealing and sterilization, can be conveyed through a bath containing the coating substance. Using means that are commonly known in the art (such as for instance a transfer line), it is in fact possible for the appropriately lined-up cans to be automatically conveyed through the coating/sealing section and turned upside down so as to cause their head portion to be entirely or partly dipped into the bath, the same cans being then removed from the bath by a subsequent rotation returning them into their intitial position, ie. with their head portion facing upwards.

In practical use, after raising the tongue 13 and opening the orifice 14, the consumer usually lowers again the tongue 13 against the surface of the head portion 11 in such a way as to prevent it from being impedimental to the mouth of the consumer drinking directly from the can. By tearing off the tongue in this way, the area of coating 10 covering the orifice 14 is caused to break off so that the

consumer is now able to conveniently remove the entire coating, as this is best shown in Figure 4.

The substance used to obtain such a coating 10 can be based on any polymeric material having a well-defined melting point, provided that it is non-toxic and biodegradable, or recyclable, and that it can be kept in its liquid state, without any degradation, by warming it at the required temperature and is further able to set within a few seconds upon application. According to current knowledges, however, the material to be used to this purpose is in a preferred manner a thermoplastic rubber of the olefinic type, such as the one that is currently used to obtain sealing gaskets by directly hot-casting the material into its seat.

Conclusively it can therefore be said that the method according to the present invention is particularly simple and cost-effective, since it does not require any special equipment, tool or operation, while the required result is anyway assured with a usage of material which is cut to a minimum. Furthermore, the protective cladding applied in such a manner is able to very closely adhere against the surface of the can, so that it does not hinder a stacking of the cans for storing and transportation, while it is quite easy and convenient to remove when the can has to be opened for drinking. The scope of the present invention is therefore extended to also cover the container resulting from the application of said method, according to the appended claims.

In particular, the fact should be stressed that the containers according to the present invention ensure full compliance with the most recent environmental standards and regulations, since they allow for the materials of the discarded cans (metal and plastics) to be conveniently separated for recovery and subsequent recycling.

It will be appreciated that the afore described method according to the present invention can be applied also to other types of tins and cans that may pose similar hygiene and use problems.

CLAIMS

1. Method for hygienically sealing drink containers (12), in particular aluminium cans, provided with a pre-engraved zone adapted to create a drink delivery orifice (14) by the use of automatic opening means (13), said orifice being adapted to be brought into contact with the mouth of the consumer and being protected by a coating (10), **characterized in that** said coating (10) is applied to the head portion (11) of the container (12) by solely dipping said portion into a bath of non-toxic and biodegradable, or recyclable, substance that is kept in its liquid state by heating and is capable of adhering and setting within a few seconds upon removal of the container from the bath, said coating (10) extending to cover at least a part of said orifice (14).

2. Method according to claim 1, **characterized in that** said coating (10) extends to cover a circular sector of the head portion (11) with an angular extension that is less than 180°.

3. Method according to claim 1 or 2, **characterized in that** said coating (10) consists of a polymer having a well-defined melting point.

4. Method according to any of the preceding claims, **characterized in that** said coating (10) consists of a thermoplastic rubber of the olefinic type.

5. Method according to any of the preceding claims, **characterized in that** said coating (10) is applied in an automated manner to the drink containers (12), along the same line in which said containers are filled and sterilized, by turning them upside down and dipping them into the bath of said coating substance (10).

6. Drink container, in particular aluminium can, comprising a head portion (11) provided with a pre-engraved zone (14) adapted to form an orifice for delivering the drink after opening the can by means of lever-type opening means (13), said head portion (11) being protected by a hygienic coating (10), **characterized in that** said coating (10) is constituted by a non-toxic and biodegradable substance which is capable of both being mantained in its liquid state by heating and setting within a few seconds upon cooling down, said substance being caused to adhere at least partially on to said zone (14) by simply dipping said head portion (11) of the can into said substance.

7. Drink container according to claim 6, **characterized in that** said coating (10) covers a circular sector of the head portion (11) by an angular extension of less than 180°.

8. Drink container according to claim 6 or 7, **characterized in that** said coating (10) is constituted by a thermoplastic rubber of the polyolefinic type.

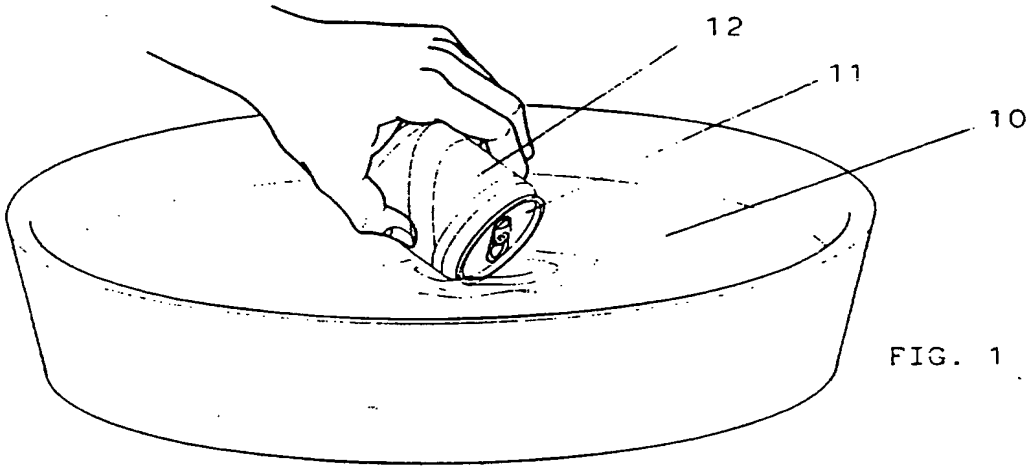

FIG. 1

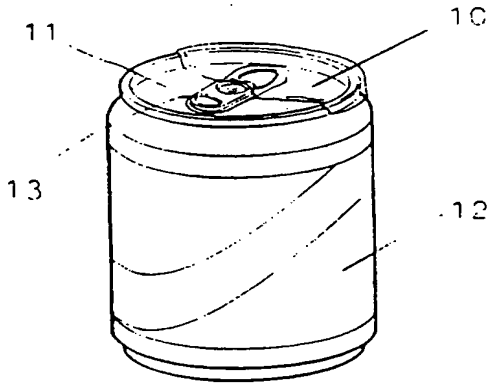

FIG. 2

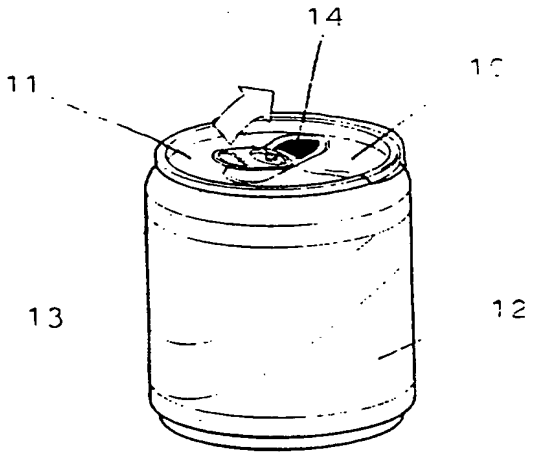

FIG. 3

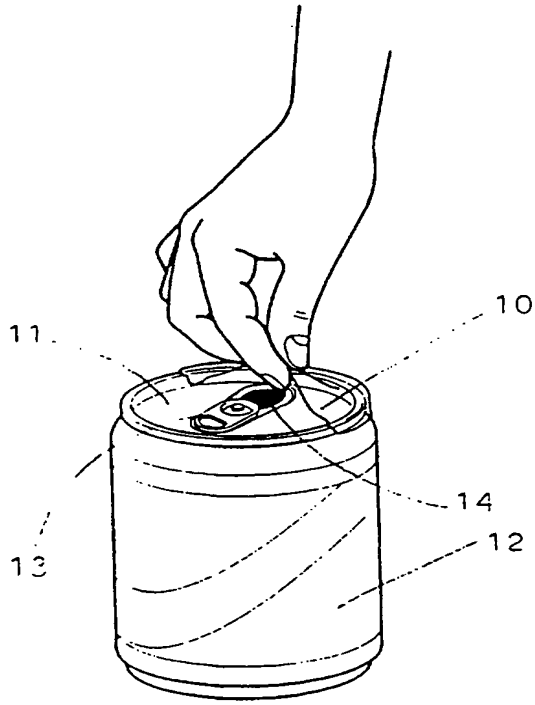

FIG. 4

INTERNATIONAL SEARCH REPORT

Inte. ›nal Application No
PCT/EP 95/03898

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65D17/00 B05B1/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B65D B08B B67B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 385 954 (FERRUCCIO CANINI) 5 September 1990 see abstract; figures ---	1,2,6,7
A	FR,A,2 684 979 (PECHINEY EMBALLAGE ALIMENTAIRE) 18 June 1993 see abstract; figures ---	1,6
A	US,A,4 992 037 (HWANG WEI-CHAO) 12 February 1991 see abstract; figures -----	1,5,6

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
30 January 1996	- 9. 02. 96

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP-A-0385954	05-09-90	AU-B-	4927290	30-08-90
		CA-A-	2009305	27-08-90
		CN-A-	1054228	04-09-91
FR-A-2684979	18-06-93	NONE		
US-A-4992037	12-02-91	GB-A-	2238270	29-05-91

Hungarian Patent Office
PIPACS 2006/2.

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Query string: P9702072
Number of hits: 1 application

Lapsed

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Publication number: 77113
Registration number: **217998**

Application date: 1995.10.02
Publication date: 1998.03.02
Date of granting: 2000.03.28
Announcement of grant: 2000.05.29

Convention priority: ITPN94A000063 - 1994.10.12
PCT Application number: EP9503898
PCT Publication number (WO): 9611851

IPC: B65D-017/00; B05B-001/18

Hungarian title: **Eljárás italtartó dobozok higiénikus légmentes lezárására, és az így előállított dobozok**

English title: METHOD FOR HYGIENICALLY SEALING DRINK CONTAINERS AND CONTAINERS OBTAINED THEREBY

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1

Abstract (granted):

A találmány tárgya eljárás italtartó dobozok (12) higiénikus légmentes lezárására, különösen alumíniumból készült dobozokhoz, melyek elorehornyolt tartománnyal vannak ellátva, mely tartomány italadagoló nyílást (14) képez, mely nyílás (14) a fogyasztó szájával érintkezo részt képez, és védoburkolattal látják el, valamint italtartó doboz (12), különösen alumíniumból készült doboz, mely elorehornyolt, felemelheto típusú eszközzel, célszeruen nyelvvel (13) való kinyitás után az ital kiadagolására szolgáló nyílás képzésére alkalmas tartománnyal van ellátva, a fejrészt (11) higiénikus légmentes lezárással (10) vonják be.

Claims:

1. Eljárás italtartó dobozok higiénikus légmentes lezárására,

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különösen alumíniumból készült dobozokhoz, melyek előrehornyolt tartománnyal vannak ellátva, mely tartomány italadagoló nyílást képez, mely nyílás a fogyasztó szájával érintkező részt képez, és védőburkolattal látjuk el, azzal jellemezve, hogy az italtartó doboz (12) fejrészére (11) a higiénikus légmentes lezárást (10) olyan nemtoxikus anyagot tartalmazó fürdőbe (10A) való bemártással alakítjuk ki, mely anyag biológiailag lebontható, újrafeldolgozható, melegítéssel folyékony állapotban tartható, és a felületre felhordva és a fürdőből kiemelve néhány másodperc alatt megtapad és megdermed; és a higiénikus légmentes lezárást (10) a nyílásnak (14) legalább egy részét fedően alakítjuk ki.
2. Az 1. igénypont szerinti eljárás, azzal jellemezve, hogy a higiénikus légmentes lezárást (10) a fejrész (11) egy körcikkelyt képező részén alakítjuk ki, ahol a körcikkelyt határoló sugarak által bezárt szög 180u-- nál kisebb.
3. Az 1. vagy 2. igénypont szerinti eljárás, azzal jellemezve, hogy a higiénikus légmentes lezárás (10) anyaga jól meghatározott olvadásponttal rendelkező polimer.
4. Az 1-3. igénypontok bármelyike szerinti eljárás, azzal jellemezve, hogy a higiénikus légmentes lezárás (10) anyaga poliolefin típusú, hőre lágyuló gumi.
5. Az 1-4. igénypontok bármelyike szerinti eljárás, azzal jellemezve, hogy a higiénikus légmentes le- zárást (10) az italtartó dobozra (12) automatikusan visszük fel, ugyanazon gyártósoron, amelyen az italtartó dobozokat (12) megtöltjük és sterilizáljuk, oly módon, hogy azokat tetejükkel lefelé fordítjuk, és belemerítjük a nemtoxikus anyagot tartalmazó fürdőbe (10A).
6. Italtartó doboz, különösen alumíniumból készült doboz, mely előrehornyolt, felemelhető típusú eszközzel, célszerűen nyelvvel való kinyitás után az ital kiadagolására szolgáló nyílás képzésére alkalmas tartománnyal van ellátva, a fejrész higiénikus légmentes lezárással van bevonva, azzal jellemezve, hogy a higiénikus légmentes lezárás (10) nemtoxikus, biológiailag lebontható anyagból áll, mely melegítéssel folyékony állapotban tartható és lehűtés után néhány másodpercen belül megdermed, és az italtartó doboz (12) fejrészét (11) egyszerűen az anyagba belemerítve a nyílás (14) tartományában legalább részben hozzátapad.
7. A 6. igénypont szerint italtartó doboz, azzal jellemezve, hogy a higiénikus légmentes lezárás (10) a fejrésznek (11) olyan körcikkely alakú tartományát borítja, ahol a körcikkelyt határoló sugarak által bezárt szög 180u-nál kisebb.
8. A 7. igénypont szerinti italtartó doboz, azzal jellemezve, hogy a higiénikus légmentes lezárás (10) poliolefin típusú, hőre lágyuló gumiból van.

Measures

3. Notification of publication (A) (QK)
Measure Date: 1998.01.05 *Announcement:* 1998.03.02

8. Grant of protection (BZ)
Measure Date: 2000.03.28 *Reception:* 2000.04.17 *Announcement:* 2000.05.29

9. Delivery of patent document (CB)
Measure Date: 2000.08.08 *Announcement:* 2000.09.28

12. Lapse of definitive protection (by reason of failure to pay the fee) (EZ)
Measure Date: 2003.06.10 *Reception:* 2003.06.11 *Announcement:* 2003.07.28